

Exploring moisture on the outside of a cold cup: For dry environments



Name: _____ Date: _____

Group: _____ Group Role: _____

What causes moisture to form on the outside of a cold cup?

If you've ever let a cold drink sit out for a while, you may have noticed that water forms on the outside of the cup. In this activity, you will explore where the water comes from.

Procedure

1. Fill a cup with ice. Add water until the cup is about $\frac{3}{4}$ full.
2. Place $\frac{3}{4}$ cup of room-temperature water in another cup.
3. Wipe the outside of both cups with a paper towel.
4. Slowly breathe warm air onto the outside of the room-temperature cup and then the cold cup.
5. Use your finger to feel the outside of each cup.



Analyze:

1. Which cup had more moisture on the outside of it?

2. Condensation is the process in which a gas changes to a liquid. Explain how condensation might be the cause of the moisture on the outside of one of the cups.

In the procedure on the following page, you can test whether the amount of water vapor in the air has an effect on the amount of moisture that appears on the outside of a cold container.

Does water vapor from the air cause moisture to form on the outside of a cold cup?

Procedure

1. Fill a wide clear plastic cup about 2/3 full with hot tap water.

2. Immediately place a taller plastic cup upside down on top of the wider cup, as shown.

3. Fill 2 plastic film canisters with ice. Add water until they are nearly full, and snap the caps on securely.

4. Wipe the outside of both canisters with a paper towel to be sure they are dry.

5. Once the tall cup appears cloudy, take it off of the other cup and immediately place it over one of the film canisters. At the same time, place another plastic cup over the other canister. This cup contains the normal dry classroom air. Wait 2–3 minutes.

6. Remove the tall cups and look at the outside of each canister closely. Use your finger to test for any liquid on the outside of each canister.



Analyze

3. Which canister had more moisture on the outside of it?

4. Why do you think there is more moisture on the outside of one canister than the other?

5. If you see a container with moisture on the outside of it, what can you say about the temperature of the container and the amount of water vapor in the air?

6. If you see a container that is completely dry on the outside, what can you say about the temperature of the container or the amount of water vapor in the air?
